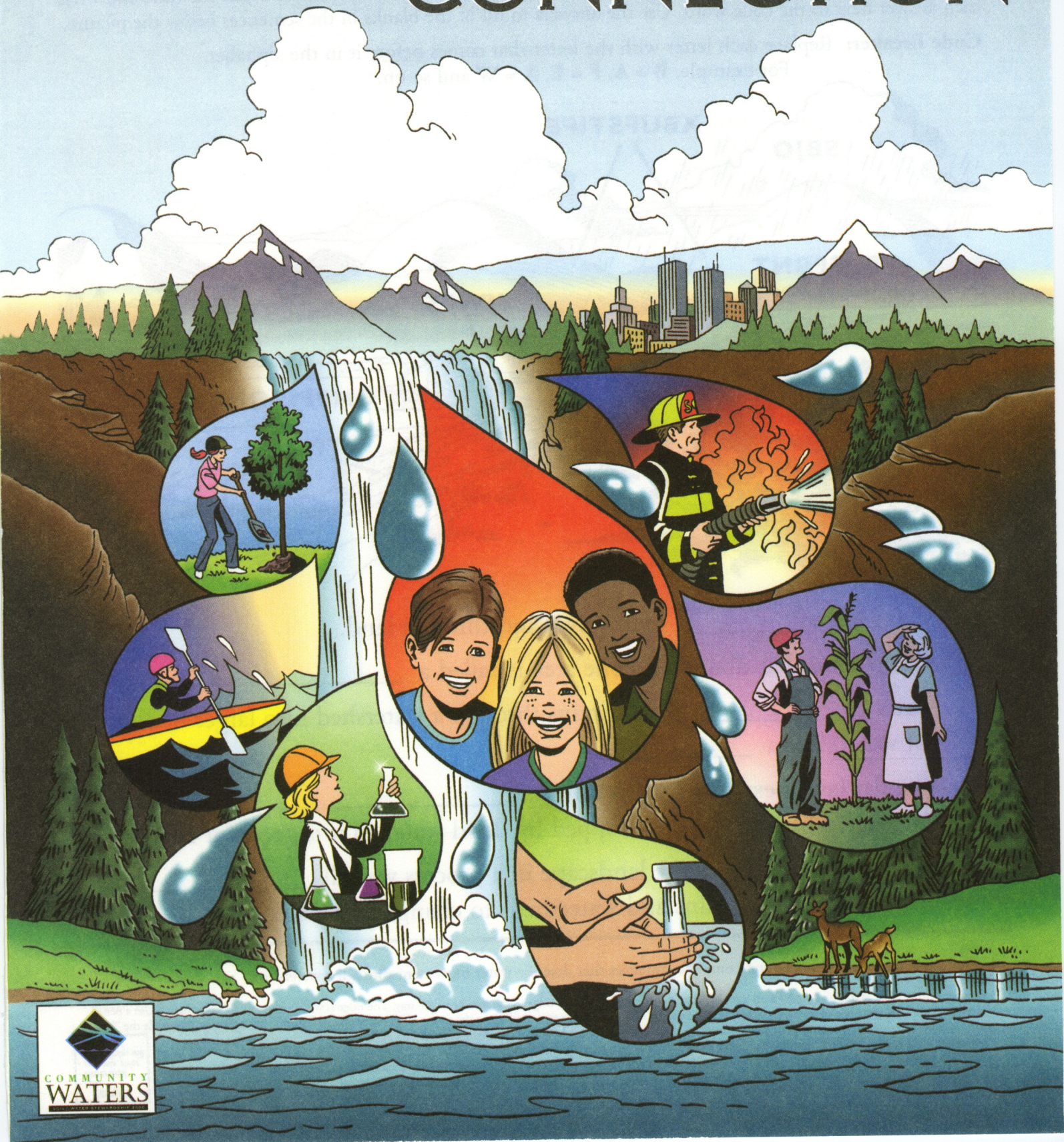


# THE WATER CONNECTION



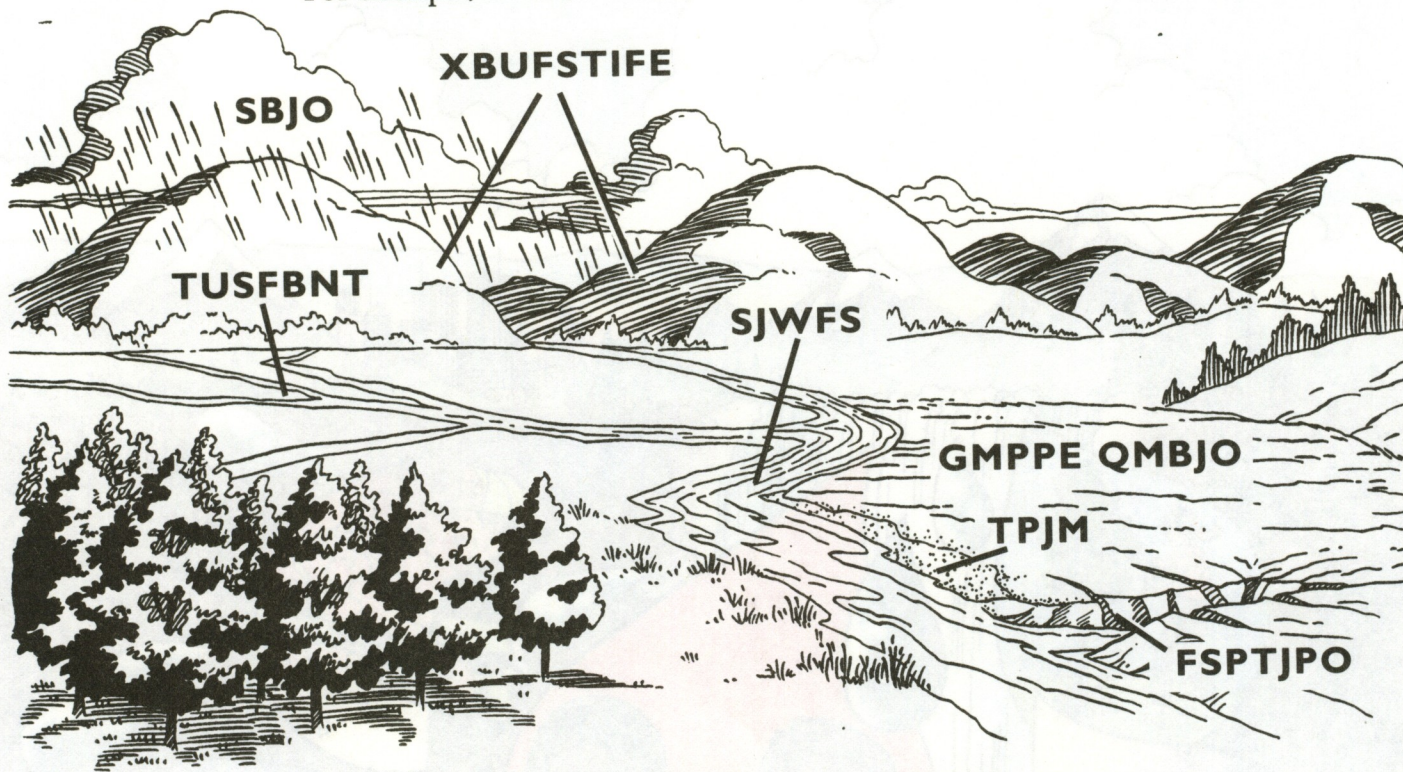


# What's a XBUFSIFE?

The different parts of this picture are labeled with words written in a **secret code**. Break the code and write each answer next to the code word. Use the answers to fill in the blanks in the sentences below the picture.

**Code Breaker:** Replace each letter with the letter that comes before it in the alphabet.

For example, B = A, F = E, X = W and so on.



Water from \_\_\_\_\_ drains over and through land.

All the land that drains into one area is called a \_\_\_\_\_.

Water in \_\_\_\_\_ drains through a watershed into larger bodies of water, like a \_\_\_\_\_.

The flat land next to a river is called a \_\_\_\_\_. This area is covered by \_\_\_\_\_ dropped by flood water so it is good for farming.

Moving water changes the landscape in a process we call \_\_\_\_\_.

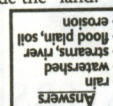
This causes flood plains and watersheds to change over time.

## Goal

Students decode encoded words and complete sentences that describe water movement through a watershed.

## Related Activities

- Help students make a watershed model with a tray of clay, soil and rocks. Make a ridge in the middle of the tray. The ridge is what separates the "watersheds." Use a pencil to dig a "river" on each side of the ridge. Sprinkle water on the ridge and watch as it drains into the rivers. With watering, the "rivers" may widen as they erode the "land."
- Have students find real-life examples of erosion in their community. Discuss how erosion changes the shape of land and how erosion around rivers changes the area and shape of its watershed. Why is it important to prevent soil erosion?
- Find aerial pictures of river areas in a book or magazine. Circle the areas in the picture that correspond to the watershed, flood plain and drainage basin.





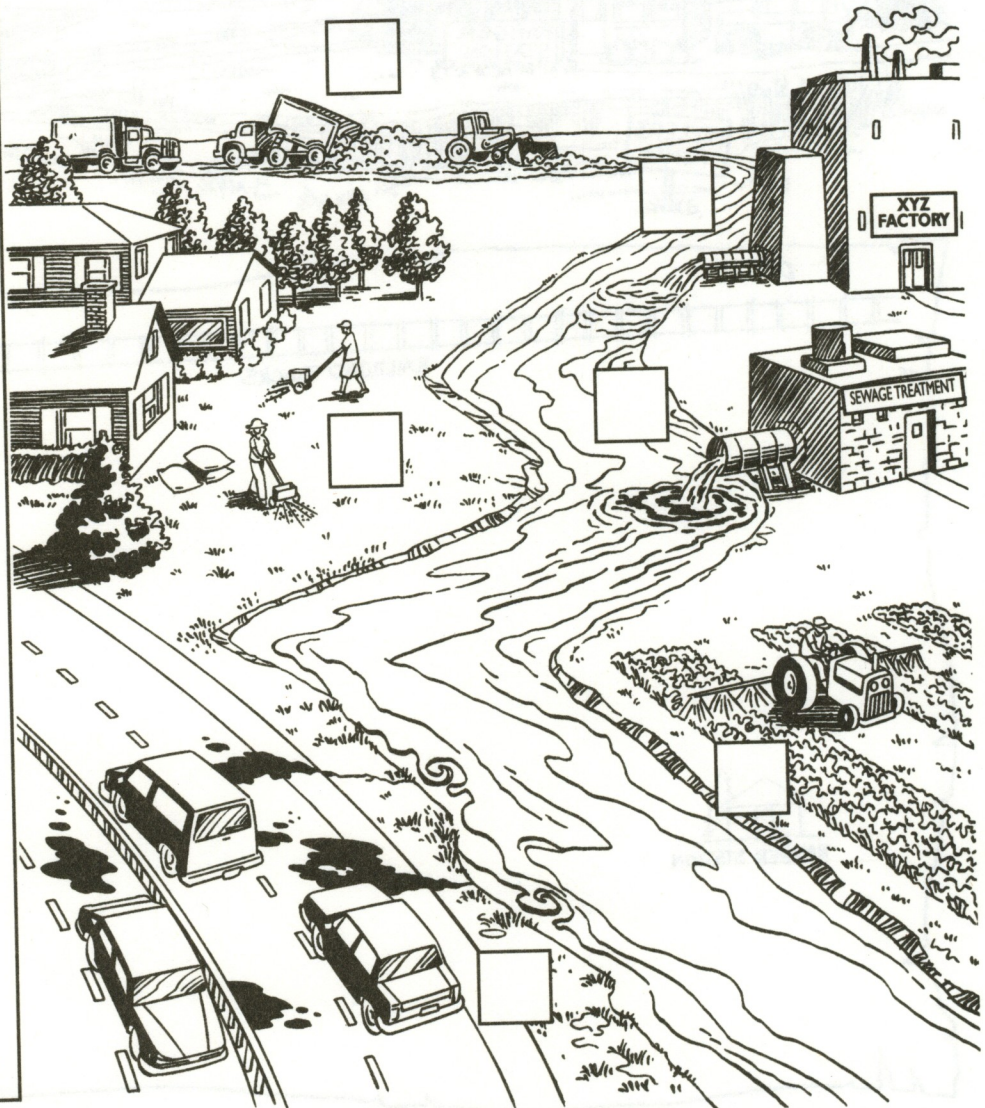
# POINT to POLLUTION

Pollution makes water dirty and unfit for humans and animals to use. Pollution can enter the water in many ways. Pollution that enters water directly from one source is called **point pollution**. Pollution that enters water from a large area without one specific source is called **non-point pollution**.

Read these descriptions of sources of pollution. Find each source in the picture below. Write the number of each description in the box beside the activity it describes.

Is each activity a point or non-point source of pollution? Write a "P" in the space next to each description if it is a point source and an "N" if it is a non-point source.

<u>Descriptions</u>	<u>Point or Non-Point?</u>
1. Salt or oil from roads runs off into streams and rivers, harming plants and animals.	_____
2. Untreated sewage dumped into rivers and lakes makes water unfit to drink.	_____
3. Pesticides applied to crops on many farms seep into the water.	_____
4. Waste from factories may contain chemicals that pollute rivers and lakes.	_____
5. Waste buried in landfill sites can leach into nearby rivers and lakes.	_____
6. Fertilizers from homes can wash into rivers, causing algae and water plants to multiply and choke off water life.	_____



## Goal

Students locate and identify sources of point and non-point pollution.

## Related Activities

- Have students name other point and non-point sources of pollution. Have them list at least one source of both point and non-point pollution in their community.
- Even a small amount of oil can pollute a large amount of water. Place a few drops of salad oil into a clean glass of water and stir it well with a spoon. Put the water aside for 20 minutes. Have students notice the film of oil that forms along the surface. Can they taste the oil? Feel the oil? For many animals and fish even a small amount of oil is deadly. Talk about the importance of disposing of motor oil safely.
- Organize a "Pick Up On Pollution" Day where students remove trash from around a stream, river, lake or watershed area. Give prizes for the most trash collected and for the most unusual piece of trash and the most useful piece of trash.

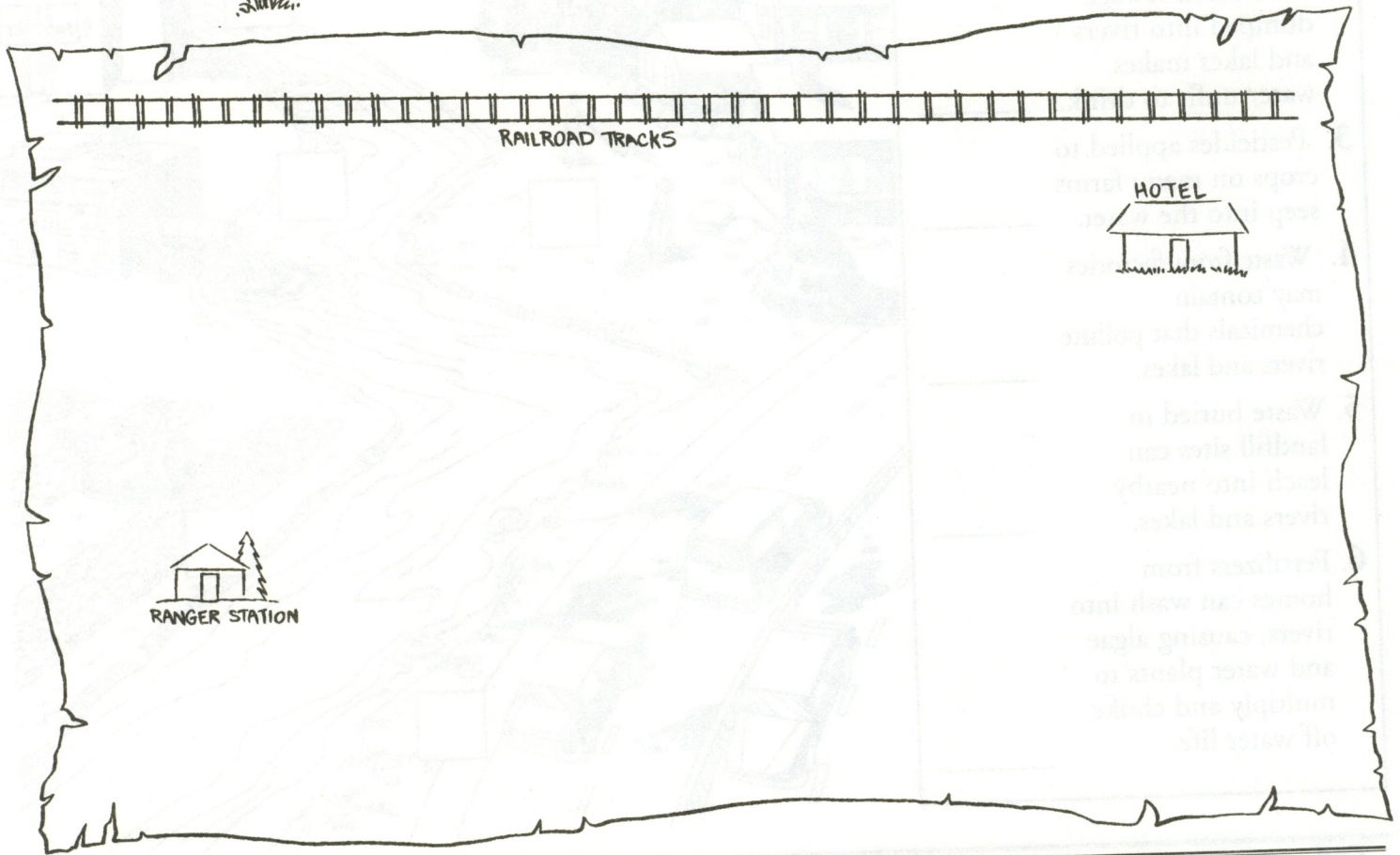
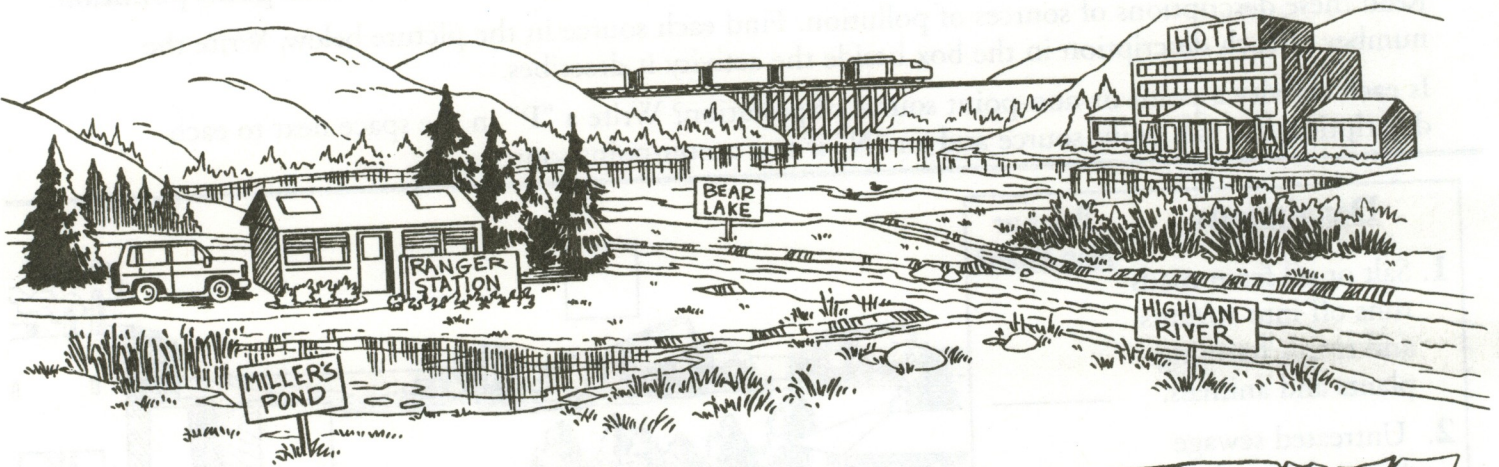


# TREASURE MAP

Clean water is a great national treasure!

Find the different sources of water in this picture.

Draw a map of this area in the space below. Draw each water source, showing its size and location. Draw other important natural and manmade features. Label each feature on your treasure map.



## Goal

Students refer to a picture of a landscape to create a map showing sources of water and other features.

## Related Activities

- Display a map of the area where you live. Have students identify the sources of water on the map. What seems to be the largest source of water for your area?
- Have students make a map of their schoolyard, playground, backyard, etc. Label the main features on the map, including any water sources.
- Have students find out how much a gallon of water costs in their community. Now find out how many gallons of water are in a nearby water reservoir or lake (contact your local conservation district). Multiply the cost per gallon by the number of gallons in the water source. How much money is it worth in terms of water alone?

Water really is a treasure to use wisely!



# CALCU-WATER

Many activities in our homes use water. Look at each activity below. The amount of water commonly used for each activity is shown. Write down how many times each activity occurs in your home for one day. Multiply that number by the number of gallons used each time. Write the answer in the space marked "TOTAL." Add all your answers to find out how much water was used in your house for one day for all the activities shown. Write that number in the **GRAND TOTAL** box.

Washing  
dishes  
in a  
sink



\_\_\_\_\_ x 10 = \_\_\_\_\_  
Times in one day      Gallons used each time      **TOTAL**

Washing  
a load  
of  
clothes



\_\_\_\_\_ x 25 = \_\_\_\_\_  
Times in one day      Gallons used each time      **TOTAL**

Flushing  
a  
toilet



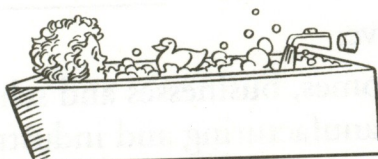
\_\_\_\_\_ x 3 = \_\_\_\_\_  
Times in one day      Gallons used each time      **TOTAL**

Taking  
a  
shower



\_\_\_\_\_ x 20 = \_\_\_\_\_  
Times in one day      Gallons used each time      **TOTAL**

Taking  
a  
bath



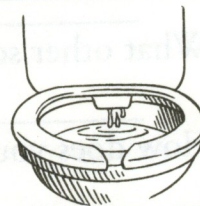
\_\_\_\_\_ x 35 = \_\_\_\_\_  
Times in one day      Gallons used each time      **TOTAL**

**GRAND TOTAL** = \_\_\_\_\_

## WHAT A WASTE!



**Hydrologists** (scientists who work with water) estimate that as much as **20 percent** of our fresh water supply each year is lost through leaky faucets. For example, a faucet that leaks just one drop per second wastes **4 gallons** of water every hour. Leaky toilets can waste as much as **one gallon** every hour. How much water is wasted in one day in your community if 100 homes have both a leaky faucet and toilet?



### Goal

Students calculate typical water usage in their homes and potential water wasted from leaks.

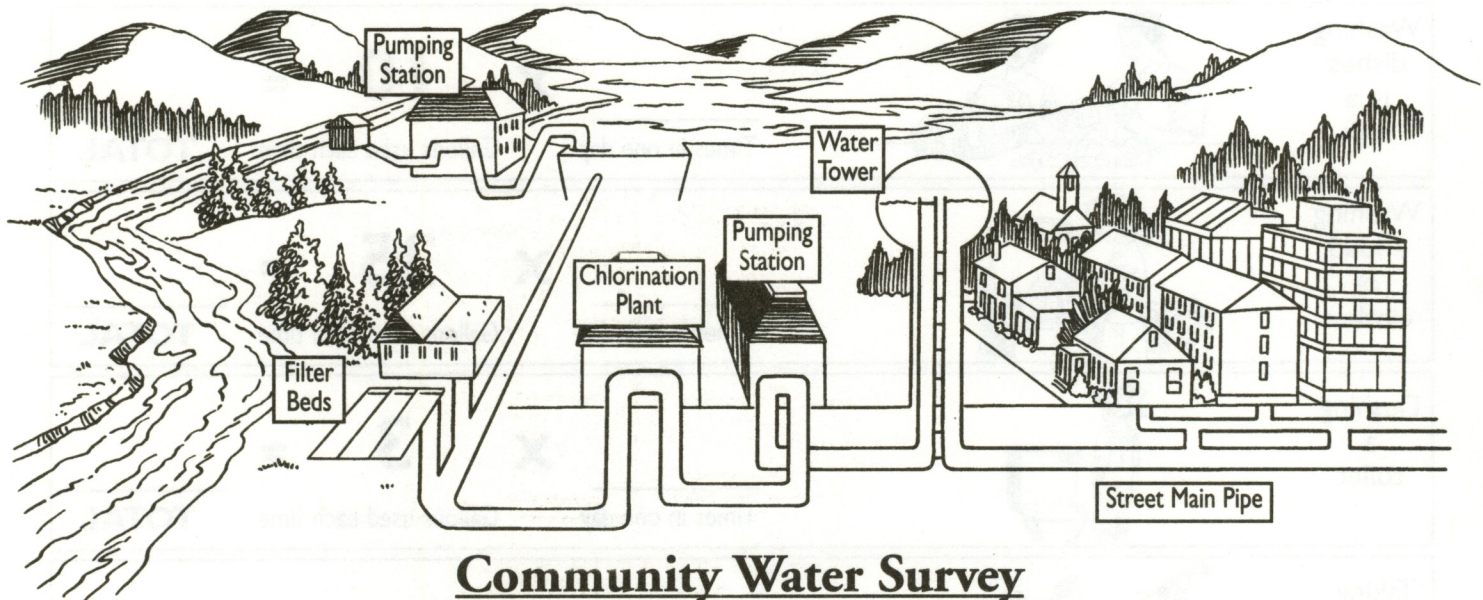
### Related Activities

- In their own homes, have students perform a toilet leak check by having an adult help them do the following: Remove the toilet tank lid and put in a few drops of food coloring. Don't flush the toilet. If the toilet bowl soon contains colored water, the toilet tank is leaking. Repair or get a new low-flush toilet.
- New water saving devices such as low-flush toilets, clothes washers, dishwashers and reduced flow showerheads are now commonly available. Have students pick one of these devices and research how much water can be saved by using it in their home. Have them share this information with their parents.
- Although household water use savings are important, agriculture use accounts for nearly 80% of all water used. Much is used for irrigation to help grow food in dry areas. Have students research what foods need the most water to grow. How could we reduce our water requirements (eg., use alternative crops, reduce demand, etc.)?



# Search for the **SOURCE**

Different communities get their clean water from different sources. This picture shows how one community gets its water from a river. Other communities may get their water from a lake or from underground streams. Homes in rural areas may get their water from a well that pumps ground water. Find out where the clean water in your community comes from by filling out the survey below. You will have to use the library or contact local people in your community to get the answers. Work with your friends to search for the source of your clean water!



## Community Water Survey

- What is the main source of clean water in your community?  
\_\_\_\_\_
- Do all homes in your community use the same source of water? \_\_\_\_\_
- Check the main ways that water is used where you live:
  - ☐ Homes, businesses and schools
  - ☐ Manufacturing and industry
  - ☐ Farming and agriculture
- What other communities use the same source of water as your community?  
\_\_\_\_\_
- What other sources of water could your community use if it had to do so?  
\_\_\_\_\_
- How does your community protect its water supplies from pollution?  
\_\_\_\_\_

### Goal

Students complete a survey to describe the sources of clean water in their community.

### Related Activities

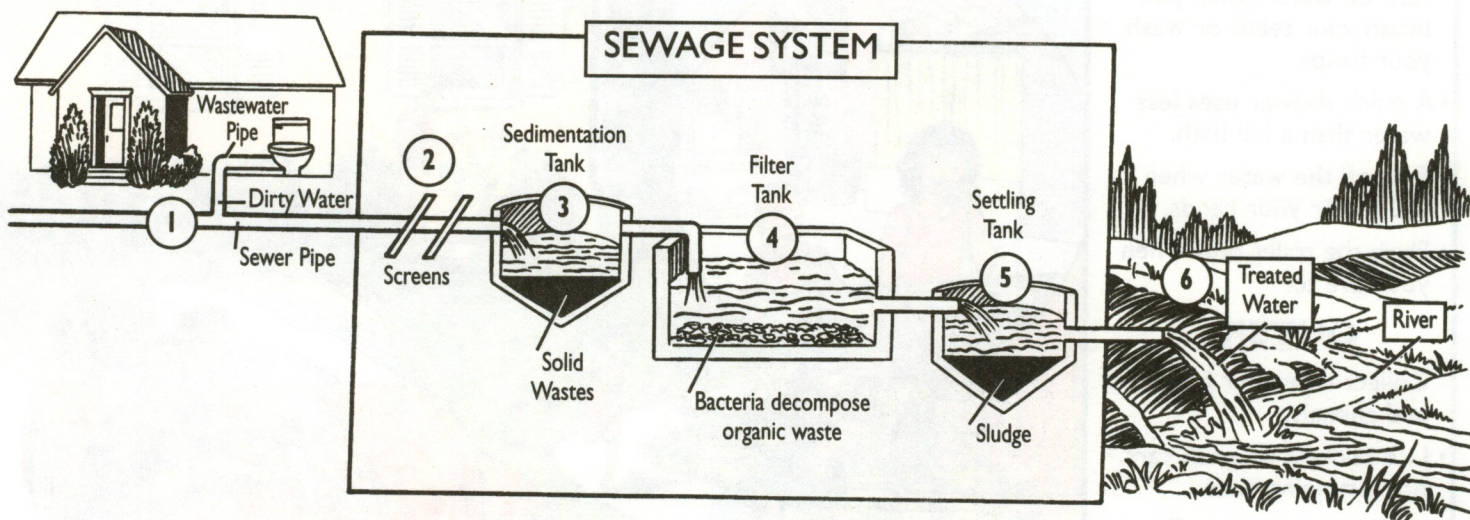
- Arrange a field trip to visit the source of clean water in your community.
- Have students cut out pictures from magazines and newspapers of possible ways that water could be polluted. Create a poster using the pictures to express the theme: "Protect (Your Community's Water Source Name) from Pollution."
- Make a miniature "water pumping station" with a small piece of plastic tubing, a bowl of water and an empty bowl. Place the bowl of water higher than the empty bowl. Put your finger over one end of the tubing and pour water into the other end. Put one end into the higher bowl of water and the other end into the empty bowl. Release your finger and watch the water flow down the tubing.



# DOWN THE DRAIN

Water is too precious to throw away forever just because it becomes dirty. Dirty water from a home flows into a sewage system where it is cleaned so it can be used again. Look at this diagram of how waste water from a home moves through a sewage treatment system.

Read the numbered sentences below the diagram. Find the number for each sentence on the diagram and observe what happens there. Complete the sentence using the words from the diagram.



1. A **wastewater pipe** collects \_\_\_\_\_ from a home and passes it into a large \_\_\_\_\_.
2. The sewer pipe drains into a **sewage system**.  
Big bits of waste are strained off by \_\_\_\_\_.
3. Screened water drains into a **sedimentation** tank where \_\_\_\_\_ wastes drop to the bottom.
4. Water then moves to a **filter tank** where small pieces are filtered out.  
Bacteria in this tank help decompose the \_\_\_\_\_.
5. Water moves into a **settling** tank where the remaining mass of solids called \_\_\_\_\_ settles to the bottom.
6. **Treated water** at the top of the settling tank is released into a \_\_\_\_\_ where it can be re-used. Sludge at the bottom of the tank can be dried and burned, used for fertilizer or disposed of in other ways.

## Goal

Students observe a simple sewage treatment system and match written descriptions with pictures of activities that clean water.

## Related Activities

- Invite a spokesperson from the waste water department to talk to children about how water is treated in their community, or have them contact the department and find out what is done with the left over sludge. Discuss the environmental considerations for using sewer sludge.
- Homes in rural areas use an individual septic system instead of using a community sewage system. Discuss the differences and similarities between a septic tank and a municipal sewage system.
- Have students make their own water filter. Place a paper coffee filter inside a plastic or metal funnel. Place a level of crushed gravel or charcoal in the bottom of the funnel. Put a level of sand over the gravel or charcoal. Pour muddy water into the funnel. Catch the water as it comes out. Why is the water clearer?

Answers  
1. Dirty water,  
sewer pipe,  
2. screens  
3. solid  
4. organic waste  
5. sludge  
6. river



# Stay Wet -- **CONNECT!**

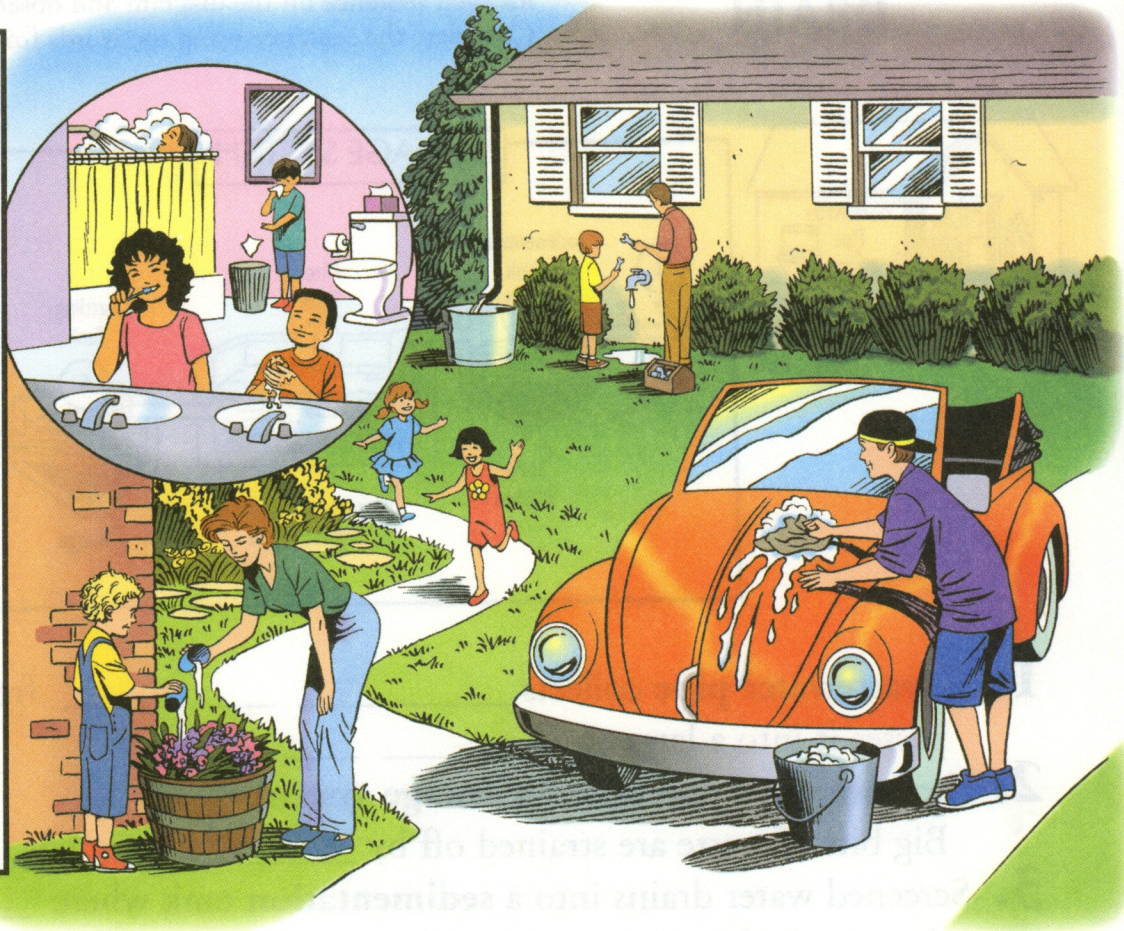
We're all connected by water. Every living thing needs water to live. Every person needs to use water wisely. Read these ways **you** can make the water connection! Find each water-saving activity in this picture and circle it.

## INSIDE

- Turn off water when you brush your teeth or wash your hands.
- A quick shower uses less water than a full bath.
- Turn off the water when you lather your hands.
- Flush the toilet only when you have to.

## OUTSIDE

- Collect rainwater for plants and animals.
- Use buckets to wash cars, not a running hose.
- Don't trample grass. The roots hold water in soil.
- Report leaky pipes and faucets.
- If you don't drink all the water in your glass, pour what's left on a plant.



Available from your local conservation district, state natural resources agency and the

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